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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,596	11/01/2002	Zhihong Ye	RD-29,357-1	2441

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GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
PATENT DOCKET RM. BLDG. K1-4A59  
NISKAYUNA, NY 12309

EXAMINER

GONZALEZ, JULIO C

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/065,596

Applicant(s)

YE ET AL.

Examiner

Julio C. Gonzalez

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15, 21-24 and 26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15, 21-24 and 26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 – 3, 5 –7, 9, 13, 21, 22, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takakado et al (US 5,237,260) in view of Johnson, Jr. (US 6,483,730) and Glennon (US 4,507,724).

Takakado et al discloses a power conditioner having a rectifier 1, an inverter 2 coupled to the rectifier 1 and the rectifier coupled directly to the machine port AG (see figure 1), a prime mover EG, a dc bus having a capacitor 3 and battery BATT supplying power to the capacitor 3 and the rectifier 1 in starting mode functions as an inverter to provide power to the machine AG and in operation mode, the combined rectifier 1 and inverter 2 provided power to the load port T01, T02 (see figure 1 & column 1, lines 15-17, 22-30, 35-39, 43-48, 54-61; column 4, lines 3, 4).

Moreover, Takakado discloses a rectifier 1 having three legs and having switching devices QR1-QR6 with a plurality of diodes D1 being connected in parallel to the switching devices (see figure 1).

However, Takakado et al does not disclose explicitly showing the inverter having a neutral output.

On the other hand, Johnson, Jr. teaches for the purpose of reducing step voltage changes, which affect the performance of loads that it is known for a device 400, use for outputting ac and dc voltages, having a plurality of legs that one of the legs (leg 430) is connected to a neutral output N through inductor  $L_3$  (see figure 4).

Although Johnson, Jr. discloses, as claimed, that one of the legs of the inverter is electrically coupled to a neutral output (see figure 1), Glennon has been further cited, for the purpose of preventing returns of regenerative currents develop by the load that it is well known in the art to have a fourth leg of an inverter (elements Q7, Q8) being coupled to a neutral output via neutral bus line 30.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design a power conditioner as disclosed by Takakado et al and to use the teachings of Johnson, Jr. of grounding of the legs through an inductor for the purpose of reducing step voltage changes, which affect the

performance of loads and to further show that it is well known in the art to have a leg of an inverter connected to a neutral point for the purpose of preventing returns of regenerative currents develop by the load as disclosed by Glennon.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takakado et al and Johnson, Jr. and Glennon as applied to claims 1-3 above, and further in view of Lakey et al (US 4,883,973).

The combined power conditioner discloses all of the elements above. However, the combined power conditioner does not disclose explicitly that a power source is recharged by the rectifier or inverter.

On the other hand, Lakey et al discloses for the purpose of optimizing the efficiency of an electrical machine at a desired output level that an electrical is run in different modes and in one mode the battery charged by the bridge rectifier (see claim 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined power conditioner as disclosed above and to charge a battery using a rectifier for the purpose of optimizing the efficiency of an electrical machine at a desired output level as disclosed by Lakey et al.

4. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takakado et al and Johnson, Jr. and Glennon as applied to claim 1 above, and further in view of Geis et al (US 5,903,116).

The combined power conditioner discloses all of the elements above. However, the combined power conditioner does not disclose using a turbine as a primer mover.

On the other hand, Geis et al discloses for the purpose of providing a motor/generator with precise control, an inverter being used with a turbine system (see figure 4 & abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined power conditioner as disclosed above and to have an inverter with four legs for the purpose of providing a motor/generator with precise control as disclosed by Geis et al.

5. Claims 10, 12 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takakado et al and Johnson, Jr. and Glennon as applied to claims 1, 16 and 22 above, and further in view of Stanton et al (US 4,179,729).

The combined power conditioner discloses all of the elements above.

However, the combined power conditioner does not disclose that the power factor is adjustable and that the power factor is zero.

On the other hand, Stanton et al discloses for the purpose of improving the power conversion system for converting the electrical power at different frequencies that it is known in the art to use a zero power factor (see figure 11A, 11B) and that the power factor is adjustable (column 8, lines 59-62).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined power conditioner as disclosed above and to have a zero power factor for the purpose of improving the power conversion system for converting the electrical power at different frequencies as disclosed by Stanton et al.

6. Claims 8, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takakado et al and Johnson, Jr. and Glennon as applied to claims 1 and 16 above, and further in view of Nguyen (US 6,067,237).

The combined power conditioner discloses all of the elements above.

However, the combined power conditioner does not disclose explicitly that the

roles of the inverter and rectifier are reversible so that the rectifier acts as an inverter and the inverter acts as a rectifier.

On the other hand, Nguyen discloses for the purpose of providing a converter with reversible functions, thus more efficient, a rectifier 15 and inverter 4 and the rectifier 4 functions as an inverter and the inverter 4 functions as a rectifier when needed (column 3, lines 55, 56; column 2, lines 25, 49; column 5, line 29 – column 6, line 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined power conditioner as disclosed above and to modify the invention by having the inverter function as a rectifier and vice-versa for the purpose of providing a converter with reversible functions, thus more efficient as disclosed by Nguyen.

7. Claims 11, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takakado et al, Johnson, Jr. and Glennon as applied to claims 1, 16 and 22 above, and further in view of ordinary skill in the art.

The combined power conditioner discloses all of the elements above. However, the combined power conditioner does not disclose that the power factor is greater than 0.95.



It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a power factor of 0.95, since it has been held that discovering the optimum value of result effective variable involves only routine skill in the art. *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

### ***Response to Arguments***

8. Applicant's arguments filed 03/20/06 have been fully considered but they are not persuasive.

Johnson, Jr. discloses clearly a device 400, which has several components 410, 420, 430 (column 4, lines 59 –64). Anyone with ordinary skill in the art would know that an electrical device is made of several components. It is further discloses that component 430 is also a switching device, which is used in combination with the other switches (column 8, lines 15-17, 23-28). It is further discloses that the load, inductor  $L_3$  and voltage affect the switching devices 431, 432 (column 14, lines 13-17). Clearly, the leg 430 is a very functional device in the electronic device 400 for converting voltage and clearly, leg 430 is connected to a neutral output “N” through inductor  $L_3$ . Moreover, the claims do not specify what is the use of the neutral output. The claims only describe that one of the legs is connected to a neutral output through an inductor, which is exactly what Johnson, Jr. discloses.

The Remarks argued that Johnson, Jr. discloses a leg being connected to a neural output, but such leg functions differently. The claims do not disclose any functionality of the leg being connected to a neutral output, therefore such argument is moot since there is absolutely no description, in the claims, of what is the neutral leg doing and what is the functionality of it and how it functions different from the Prior Art.

With respect to the Glennon reference, again, it is pointed out that such reference was cited for showing that it is well known in the art to have a leg of an inverter being grounded or connected to a neutral output. As shown in figure 1, switches Q7, Q8 are connected to bus “**neutral bus line 30**” (column 3, line 25). The Remarks sent argued that such switches are not connected to a neutral output, yet the reference discloses very clearly that bus line 30 is a neutral bus line. Are there two different types of neutral outputs? Why neutral bus line 30 would not be a neutral bus line? How is the node between switches Q7 and Q8 not connected to the neutral bus line 30? Figure 4, clearly shows that the nodes connecting the neutral bus line 30 is grounded. Why would the sources 10 be grounded and not the neutral bus line 30 when it is clearly shown in figure 2 that it is?

How can a grounded node, connected to a bus line, in this case bus line 30, not be grounded? Is the node ignoring neutral bus line 30 so that it is not neutral, even though the reference clearly discloses that it is a neutral bus line? Is that possible?

9. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

### ***Conclusion***

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened

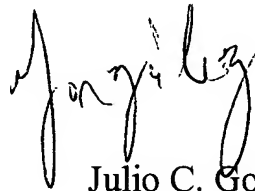
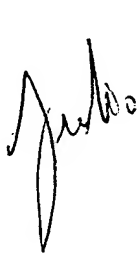
statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julio C. Gonzalez whose telephone number is 571-272-2024. The examiner can normally be reached on M-F (8AM-5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Julio C. Gonzalez  
Primary Examiner  
Art Unit 2834

Jcg

April 17, 2006